

## Effect of Alkaloids of *Achyranthes aspera* Linn. on fertility in male albino rats (*Rattus norvegicus*)

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### ABSTRACT

*Achyranthes aspera* Linn. (Amaranthaceae), is an abundant indigenous medicinal herb found throughout India. Traditionally it is being used to treat variety of disorders in India and different parts of the world. Based on the literature available, it was confirmed that the crude extracts of the plant show potential antifertility effect on laboratory animals. Saponins alkaloids and flavonoids are the principal phytochemical constituents of the plant. The main objective of present study was to evaluate the effect of total alkaloids from *A. aspera* Linn. on fertility in male albino rats (*Rattus norvegicus*). A total of 24 proven fertile male albino rats were equally divided into four groups. The three treatment groups (T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>) were orally administered with total alkaloids of *A. aspera* about 50, 100, 150mg/kg body weight/day, respectively for 30 consecutive days. Normal saline was orally given to control group rats for the same period. On day 31 all the animals were sacrificed and the reproductive organs were removed and their weights were recorded. Sperm and morphological studies were done to observe the effect of total alkaloids on fertility. Weights of testes and accessory glands and sperm counts were significantly decreased in all the treated animals on dose dependant manner in comparison with control group animals. Hematological and serum parameters were studied to see toxic side effects, if any, in treated animals. These haematological and serum parameters showed no significant changes in treated animals at the tested dose levels. Hence, it is concluded that the total alkaloidal fraction of *A. aspera* L. shows antifertility effect on male albino rats on dose dependent manner without any toxic side effects at the tested dose levels.

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*Achyranthes aspera* Linn. belongs to the family Amaranthaceae. It is an annual, stiff erect herb and found commonly as a weed throughout India and used by traditional healers for the treatment of fever, dysentery and diabetes (Girarch *et al.*, 1992). Leaf decoction for cardiovascular toxicity has been reported (Han and Un, 2003) and the ethanolic extract of the aerial parts of the plant shows antimicrobial activity (Valsaraj *et al.*, 1997). Roots are used as astringents to wounds, in abdominal tumor and stomach pain (Ghani, 2003). The benzene extract of the stem bark shows abortifacient activity in rat (Bhattarai *et al.*, 1994). Feeding of 50% ethanolic extract of *A. aspera* to male rats result in reduced sperm counts (Sandhyakumari and Boby, 2002), a composite plant extract of the root of *A. aspera* and the leaf of *Stephania hernandifolia* shows spermicidal activity in

*vitro* (Paul *et al.*, 2006). Leaf extracts were reported to possess thyroid stimulating and antiperoxidative properties (Tahiliani and Kar, 2000). The aqueous and methyl alcohol extracts of the plant also decreased blood glucose levels in normal and alloxan induced diabetic rabbits (Akhtar and Iqbal, 1991). The plant is reported to contain alkaloids, flavonoids, saponins, steroids and terpenoids (Gokhale *et al.*, 2002). Alkaloids generally exert pharmacological activity particularly in mammals. Many of our commonly used drugs are alkaloids from natural sources and new alkaloid drugs are being developed for clinical use (Rogers and Wink, 1998). Since, *A. aspera* contains significant amount of alkaloids, they were isolated and tested for their effect on fertility in male albino rats.

### MATERIALS AND METHODS

#### Collection of plant:

*Achyranthes aspera* Linn. was freshly collected during Sept-Nov., 2009 in and around Kakatiya University Campus, Warangal, India and cleaned with distilled water and shade dried at room temperature. The plant was authenticated and a voucher specimen was preserved in

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